OPERATING INSTRUCTIONS AND WARRANTY

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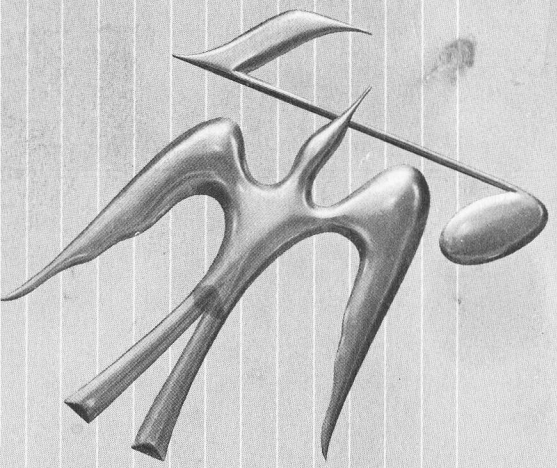

THE FISHER

Philharmonic IV

MODEL P-29

Stereophonic Radio-Phonograph

PRICE $1.00

WORLD LEADER IN HIGH FIDELITY

CONGRATULATIONS!

With your purchase of a FISHER instrument you have completed a chain of events that began many months ago, in our research laboratories. For it is there that the basic concept of the equipment you have just acquired came into being—its appearance, its functions, its quality of performance, its convenience of use.

But the end step—your purchase—is merely a beginning. A door has now opened, for you and your family, on virtually unlimited years of musical enjoyment. Recognizing that one of the keys to pleasurable ownership is reliability, we have designed this instrument to give long and trouble-free service. In fact, instruments we made over twenty-five years ago are still in use today.

Remember always that we want this equipment to give you the best performance of which it is capable. Should you at any time need our assistance toward that objective, please write me personally.

AN IMPORTANT SUGGESTION

Many hours have been spent by our engineers and technical writers to create this instruction book for your guidance and enjoyment. If you want the *most* out of your FISHER, there is only one way to obtain it. With the equipment before you, please read this booklet carefully. It will be time well spent!

Avery Fisher *Founder and President*

FISHER FIRSTS—Milestones in the History of High Fidelity Reproduction.

1937 First high-fidelity sound systems featuring a beam-power amplifier, inverse feedback, acoustic speaker compartments (infinite baffle and bass reflex) and magnetic cartridges.

1937 First exclusively high fidelity TRF tuner, featuring broad-tuning 20,000 cycle fidelity.

1937 First two-unit high fidelity system with separate speaker enclosure.

1938 First coaxial speaker system.

1938 First high fidelity tuner with amplified AVC.

1939 First 3-Way Speaker in a high fidelity system.

1939 First Center-of-Channel Tuning indicator.

1945 First Preamplifier-Equalizer with selective phonograph equalization.

1948 First Dynamic Range Expander with feedback.

1949 First FM-AM Tuner with variable AFC.

1952 First 50-Watt, all-triode amplifier.

1952 First self-powered Master Audio Control.

1953 First self-powered, electronic sharp-cut-off filter system for high fidelity use.

1953 First Universal Horn-Type Speaker Enclosure for any room location and any speaker.

1953 First FM-AM tuner with a Cascode Front End.

1954 First low-cost electronic Mixer-Fader.

1954 First moderately-priced, professional FM Tuner with TWO meters.

1955 First Peak Power Indicator in high fidelity.

1955 First Master Audio Control Chassis with five-position mixing facilities.

1955 First correctly equalized, direct tape-head master audio controls and self-powered preamplifier.

1956 First to use Power Monitor in a home amplifier.

1956 First All-Transistorized Preamplifier-Equalizer.

1956 First dual dynamic limiters in an FM tuner for home use.

1956 First Performance Monitor in a high quality amplifier for home use.

1956 First FM-AM tuner with TWO meters.

1956 First complete graphic response curve indicator for bass and treble.

1957 First Golden Cascode FM Tuner.

1957 First MicroRay Tuning Indicator.

1958 First Stereophonic Radio-Phonograph with Magnetic Stereo Cartridge.

1959 First high-quality Stereo Remote Control System.

1959 First complete Stereophonic FM-AM Receiver (FM-AM tuner, audio control, 40-watt amplifier).

1959 First high-compliance plus high-efficiency free-piston speaker system.

1960 First to use MicroRay for FM tuning and as a Recording Audio Level Indicator.

1960 First complete stereo FM-AM receiver with 60-watt power amplifier and new 7591 output tubes.

1960 Smithsonian Institution, Washington, D.C. accepts for its collection America's first commercially manufactured high fidelity radio-phonograph, made by Avery Fisher in 1937.

1960 First reverberation device, for use in high fidelty equipment—The Fisher Dynamic Spacexpander.

1960 First stereo tuner with MicroTune.

1960 First FM tuner with six IF stages.

1960 First FM tuner with five limiters.

1960 First front panel antenna selector switch, 72-300 ohm, Local-Distant positions.

1961 First Multiplex units with STEREO BEACON and automatic switching, mono to stereo.

1961 First complete receivers with Multiplex.

1961 First FM-Stereo-Multiplex tuners with STEREO BEAM.

1961 First loudspeaker system with frameless woofer cone, eliminating all parasitic resonance.

1961 First internal switching system to permit immediate tape playback with use of all controls and switches.

1962 First simplified-operation Control-Amplifier, with infrequently used controls behind front-panel cover, yet immediately accessible.

1962 First loudspeaker with eddy-current-damped voice coil.

1962 First bass speaker with combined serrated-aluminum and fiber cone.

1962 First FM Tuner Kit with separate d'Arsonval meter for tuning and separate cathode ray stereo broadcast indicator (STEREO BEAM).

1962 First Stereophonic FM Tuner with TUNE-O-MATIC Motor Tuning.

1962 First Supersonic Wireless Remote Control in a high fidelity component.

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THE FISHER PHILHARMONIC IV

MODEL P-29

Stereophonic Radio-Phonograph

THE MAGNIFICENCE of old-world cabinet craftsmanship has been combined with the latest products of advanced electronic engineering to create the new FISHER *Philharmonic* — a musical instrument that meets the most exacting criteria. Each section in the *Philharmonic* has been designed to meet the laboratory standards that distinguish all FISHER components. The unusually sensitive tuner can be used for AM and FM, and for multiplexed FM stereo reception when the optional plug-in adaptor is installed. Six controls enable you to select any program source instantly and to adjust volume and tonal characteristics to your taste. The renowned Garrard record changer and diamond stylus cartridge convey faithfully every musical nuance of monophonic or stereophonic records. Special connections are provided for the FISHER WS-1 Wide Surround speakers. Twenty watts of music power, free of all audible distortion, are supplied by a dual-channel stereophonic power amplifier which reproduces a complex orchestral passage as easily as the delicate tones of an oboe. Two acoustically-balanced three-way speaker systems recreate the dynamics and spaciousness of the modern orchestra as only stereophonic sound reproduction makes possible.

Flawless circuitry, the use of costly, carefully selected materials, and unhurried manufacture — essential constituents of quality which are too often lost in mass production — all of these will contribute to years of trouble-free operation and to your greater listening pleasure. These are the attributes which have, for over twenty-five years, created the world-wide FISHER reputation.

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WHAT IS STEREOPHONIC SOUND?

STEREOPHONIC SOUND (stereo) is a method of reproducing sound by means of two independent channels, left and right, so that a spatial feeling of direction and depth is recreated. It is the extension of high fidelity sound into three dimensions. In fact, it offers the closest approach to true high fidelity yet achieved because it comes closest to the ultimate aim of all high fidelity systems — a perfect recreation of the original live sounds. Thus, good stereophonic sound *is* high fidelity in the truest sense of the term.

This feeling of dimension is lost with monophonic (single channel) reproduction, because our ears help determine the relative position of separate instruments in an ensemble only if each hears a slightly different version of the sound, just as visual depth perception depends on the two separate, slightly different pictures received by the eyes. Merely using two or more speakers on a single amplifier does not solve the problem; it only spreads the single sound source without providing the all-important different "aural viewpoints."

True stereo sound, then, requires the use of two independent sound paths from the origin to your ears, kept separate at all times during recording, transmission and reception. This requires the use of two separate sets of recording amplifiers, a means of keeping the channels apart during recording and radio broadcasting, and finally, two independent amplifier and speaker systems in the home. In a stereo record, each wall of the groove contains a separate signal, and the stereo cartridge is designed to pick up each of these two channels separately. The new system of FM stereo broadcasting (known as "multiplex") utilizes a separate supersonic signal, in addition to the main signal. By combining these two signals in a multiplex converter, the original left and right channels are recovered. Stereo tape recordings are made by impressing the two channels on separate parallel tracks running along the length of the tape.

No attempt is made to keep the two channels completely separate. In a live performance, your left ear hears many of the sounds on your right, and vice versa. Thus, keeping the channels totally apart from the original recording sessions to the final playback in your home would

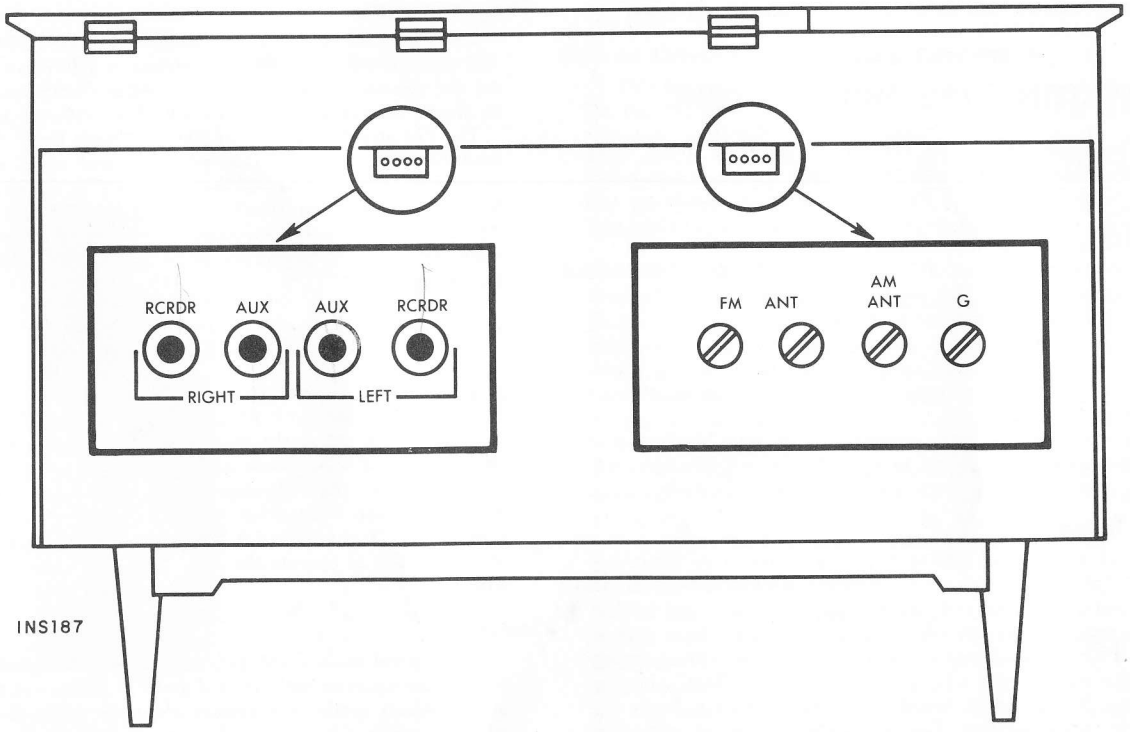


FIGURE 1. Rear View of the Philharmonic

result in an unnatural effect. But enough separation is maintained so that a definite feeling of direction occurs as you listen to the reproduced sound. The result is a remarkably vivid illusion of great depth and spaciousness, such as is normally obtained only at a live performance.

INSTALLING THE PHILHARMONIC

PLEASE READ these instructions carefully before you begin using your *Philharmonic*. This booklet was prepared with you in mind, to help you become familiar with the controls. Correct installation and an understanding of what each control does is important in obtaining the fullest enjoyment from your FISHER *Philharmonic*.

The *Philharmonic* operates on *AC only*. Plugging it into a DC outlet will result in serious damage. The power cord extending from the back of the cabinet should be connected to a wall outlet supplying 105 to 120 volts AC at 50 or 60 cycles. The 60-cycle current is available in almost all areas of the United States; but if you are in any doubt about your power source, we suggest you call your local utilities company to make sure.

In the rare case that you have 50-cycle AC in your location, you will need a special adaptor pulley so that the Record Changer will revolve at the correct speed. Check with your FISHER dealer.

The Record Changer

During transit, the Record Changer is held firmly to its mounting board by two flat-head screws — one in the left rear corner of the Changer baseplate, the other near the right front corner, just behind the control levers. To prepare the Changer for use, these screws should both be turned *clockwise* as far as they will go without using force. When this is done, the Changer baseplate will "float" about a half inch above the mounting board, and should bounce freely up and down under hand pressure. The purpose of this shock mounting is to prevent cabinet vibrations and jolts from causing the stylus to skip around the record grooves.

Remove the rubber bands used to secure the pickup arm and record overarm.

The Antennas

There are two antennas already built into the *Philharmonic:* one for AM and one for FM. The AM antenna is a ferrite-core loop, mounted on the chassis. It will provide excellent reception of AM stations in almost all cases without the aid of an external antenna.

The FM antenna is made of 300-ohm "twin lead", the same material used for TV antenna lead-in wire, cut and wired especially for use as an FM antenna. You will find it stapled to the back of the cabinet. It will give excellent results on both stereophonic and monophonic FM broadcasts, except possibly in extreme fringe areas. If you have difficulty with FM reception, consult "ANTENNAS" on page 8 of this manual.

THE CONTROLS

ON THE NEXT PAGE there is an illustration of the dress panel of your *Philharmonic,* with all markings and controls shown. The controls have been set at the factory to the positions shown so that you can use your *Philharmonic* as soon as it is installed. We urge you, though, to read the following section in a careful and leisurely way so that you will know what each control does and how to use it to your benefit. You will find it helpful to refer to Figure 2 as you read, or, better still, to operate the controls themselves and become familiar with them.

Tuning

This control selects AM and FM stations you want to receive. The single knob operates both the AM and FM sections of the *Philharmonic* tuner; which mode you receive depends upon the setting of the selector switch, which we will explain below.

On the dial glass, you will find the FM markings above, and the AM calibration below. Between them is a "logging" scale, calibrated in

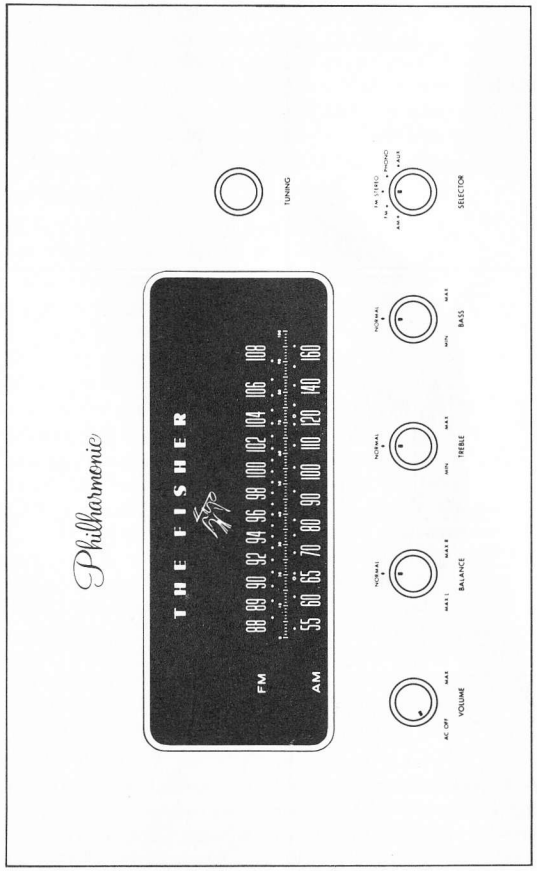


FIGURE 2. Dress Panel of the Philharmonic

linear fashion from 0 to 100, which you may use to locate either AM or FM stations by noting the position of the dial pointer along the logging scale. Many people find this more convenient than remembering exact station frequencies.

Power On-Off and Volume Control

This control combines the functions of power switching and volume. In the AC OFF position, power to the entire set is shut off. Turning the control slightly clockwise until it clicks turns the power on. You will see the tuner dial light up, and the jewel indicator at the base of the *Philharmonic* will also be illuminated. Wait about 30 seconds for the tubes to reach operating temperature. Turning the control further clockwise increases the total sound volume from both speakers.

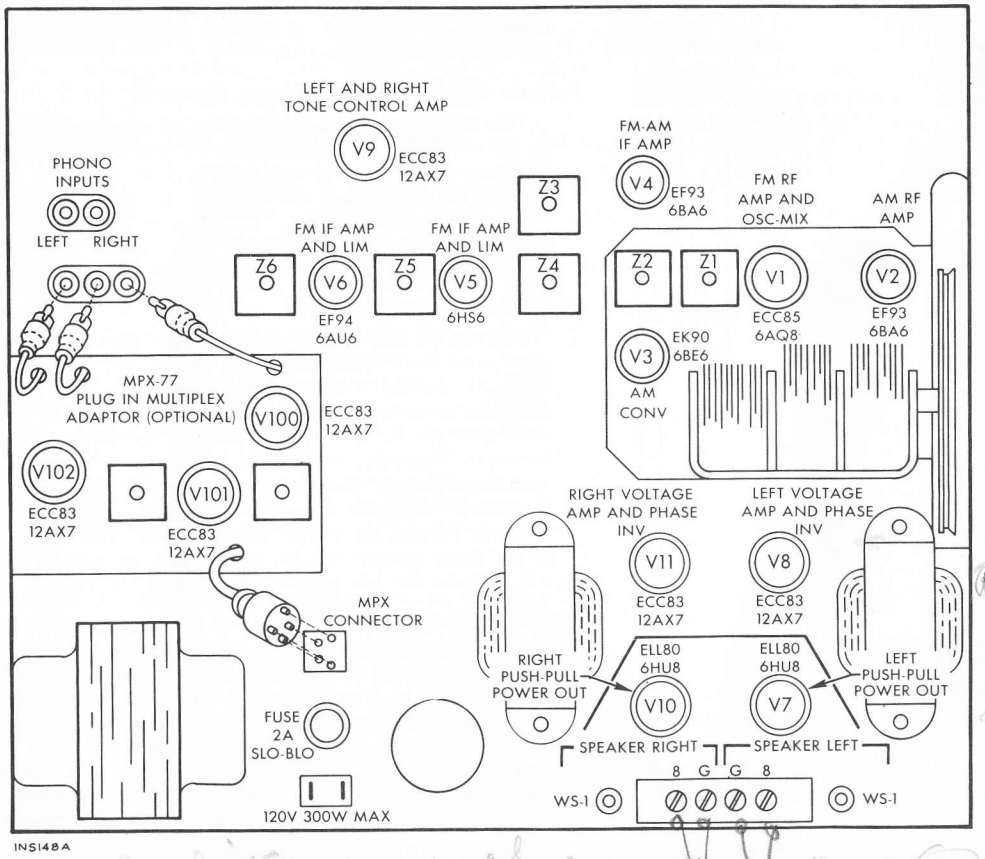
Balance Control

You can use this control to obtain equal volume from both speaker systems in the *Philharmonic;* and, in general, to vary the volume of the right speaker system relative to the left. For a natural stereo effect, balanced separation is important: neither side should predominate over the other any more than it did during the original performance. Normally, this control will be in the center, or NORMAL position, although small variations to either side are to be expected because of differences in room acoustics or imbalance in the program material. Turning the control toward MAX-R will increase the volume of the right speaker relative to the left; turning it toward MAX-L will increase the left speaker volume over the right.

Treble and Bass Controls

With these controls you can adjust the tone quality of the sound to suit your tastes, or to compensate for deficiencies in the program material. The Bass control affects the low-frequency portion of the sound spectrum, leaving the midrange and treble unchanged. Turning this control toward MAX boosts the bass; turning it to MIN attenuates it. Any intermediate degree is available. The Treble control boosts the high frequencies relative to the middle and lower notes when it is turned toward MAX, and attenuates them toward

FIGURE 3. The Receiver Chassis



MIN, in the same manner as the Bass control. Both controls have NORMAL positions, and when they are set there, the *Philharmonic* will reproduce the entire frequency range exactly as transmitted or recorded. This is where the controls should generally be set, but since their use is chiefly a matter of taste, we suggest that you experiment to find the settings which suit you best. The controls vary treble and bass in both channels simultaneously.

Selector Switch

This is the switch that will permit you to select the various functions of your *Philharmonic*. Below are the positions and their uses.

AM. Use this position to receive standard AM broadcasts. Tune according to the AM portion on the right side of the tuning dial, or use the logging scale.

FM. In this position, your *Philharmonic* will receive monophonic FM broadcasts, and also stereophonic FM broadcasts monophonically. In both cases, the same sound will be heard from both speaker systems.

FM STEREO. If the FISHER MPX-77 Multiplex Adaptor is installed in your *Philharmonic*, you can receive multiplexed FM stereo broadcasts with the Selector set here. If you do not have the Adaptor, this position is inactive. See your FISHER dealer about obtaining the MPX-77. It is extremely simple to install (no electronics experience is needed to do so), but if you wish, your dealer can assist you.

With the Adaptor installed and the Selector switch set to FM STEREO, you will not find it difficult to recognize FM stereo broadcasts, because of their unique sonic "spread". A few days' experience with your *Philharmonic* and with FM stations in your area will tell you which ones broadcast stereophonic programs regularly. Your local newspaper will also be a useful guide in planning your FM listening, and will often provide a list of stations in your vicinity which are equipped to broadcast stereo.

Note: If your *Philharmonic* is fitted with the Adaptor, we suggest that you do not try to receive monophonic FM broadcasts with the Selector in the FM STEREO position, since there may be a noticeable hiss present in the background. For monophonic FM, switch to FM.

PHONO. With the switch in this position, you can play either monophonic or stereophonic records on the Changer in the *Philharmonic*. When you play a stereo disc, the left and right channels will be fed to the corresponding speaker systems and you can enjoy stereophonic sound. With a monophonic recording, the same sound will be heard from both speakers. This is not stereo, since the program source is monophonic, but the reproduction will still be greatly enhanced by hearing it through two sets of speakers.

AUX. When the Selector is set to this position, the *Philharmonic* will reproduce an external high-level audio source fed into the AUX INPUT jacks on the Receiver chassis. Such a source might be an additional tuner, audio from a TV set, an electronic organ, or some similar device. See "ACCESSORIES" before you make a connection.

ACCESSORIES

YOUR *Philharmonic* is provided with jacks for connecting several additional high fidelity components: a tape player or tape recorder for stereo or mono tapes; any high-level stereophonic source, or monophonic TV sound if the two AUX INPUT jacks are connected together; the MPX-77 Multiplex Adaptor; and a pair of FISHER WS-1 Wide-Surround® speakers.

All these jacks are accessible from the back of the *Philharmonic*. You will find it helpful to refer to Figures 1 and 3 while you read what follows.

Tape Recorder

You can record on tape any mono or stereo program through the *Philharmonic*. The jacks labelled RCRDR (RIGHT and LEFT) on the back of the Receiver chassis will feed independent left and right stereo signals to a tape recorder. Whatever source is selected by the Selector switch on the *Philharmonic* panel will appear at these jacks, but the Volume, Bass and Treble controls have no effect on the recorded signal. Thus you can record in complete silence, if you wish,

by turning the *Philharmonic's* Volume control all the way down, or set the Volume control anywhere you like for pleasant listening, using the tone controls, too, without any effect on the recording. Recording volume is controlled only by the appropriate knob on the recorder itself.

Auxiliary Sources

A pair of auxiliary input jacks, labelled AUX, one for each channel, is located at the top of the rear chassis skirt. These are high-impedance, high-level inputs, suitable for audio from a tape player (or playback from a tape recorder), TV sound, an electronic organ, or any other stereo or mono high-level source. If the source is monophonic, the right and left channel AUX inputs must be fed together with the same signal, otherwise sound will be heard from only one side of the *Philharmonic*. This can be done by using a "Y-connector", about which your dealer or TV repairman can advise you.

In order to play tapes on a player or recorder through the *Philharmonic*, the player or recorder must already contain the necessary preamplifier and equalizer circuits. If you are in doubt, consult the instruction manual which accompanies your tape recorder.

Multiplex Adaptor

This optional accessory, the MPX-77, brings you full enjoyment from multiplexed FM stereo broadcasts. It fits into a special cut-out on the chassis, and four cables connect it into the receiver circuits. Installation is quick and simple. If you wish to obtain the adaptor, see your FISHER dealer. He can help you install it.

ANTENNAS

YOUR *Philharmonic* has two built-in antennas, one for AM and one for FM. These will suffice for all monophonic and stereophonic reception except under very unusual conditions: an extreme "fringe" area, or one where a great deal of interference prevails. In such cases, an outdoor or attic antenna may be required, especially for multiplexed FM stereo reception. If you wish, you can also experiment with an external AM antenna.

Figure 1 includes the Antenna Terminal Identification Strip located on the back of the *Philharmonic* cabinet. It will be helpful to refer to it as you read.

FM Antenna

An outdoor or attic antenna will often make a world of difference in the quality and reliability of reception. We suggest you see your dealer or TV serviceman for detailed information about makes and types. If you use an external antenna, first disconnect the two lugs from the built-in FM antenna from the terminal screws, and then connect the wires from the new antenna to the terminals marked FM ANT. Under some conditions, use of an outdoor antenna may increase the input signal to the point where it causes overloading of the FM tuner. When this condition is present, a strong FM station may appear at several points of the FM band. To prevent overloading, remove the lead from the outdoor antenna and reconnect the internal antenna of the *Philharmonic*.

Often a TV antenna will serve very well for FM reception, both mono and stereo. Since the relative success or failure of an attempt to use a TV antenna for FM is subject to many unpredictables, all we can say definitely is that it is worth a try. If it appears to improve reception, purchase a good-quality two-set coupler so that you can use the same antenna for your TV set and for the *Philharmonic*.

Since multiplexed FM reception requires more signal at the antenna terminals than monophonic FM, you may find that stereophonic broadcasts are noisy even though monophonic programs from the same station are quiet. If this is the case, you may need to relocate your FM antenna, reorient it, or use one with higher gain or directional properties.

When you use a directional antenna (many TV antennas are of such a design), you will often obtain good reception from one compass direction only; if this is true in your case, you may need a rotator for your antenna.

AM Antenna

A suitable AM antenna can be anything from a few feet of wire strung behind a picture molding or draped behind the cabinet, to an elaborate "long-wire" array on poles outdoors. A complicated system is generally unnecessary, however, and it may cause overload and distortion of the sound. If you wish to use an external antenna for AM reception, loosen the screw marked AM and the one marked with a ground symbol, both on the antenna terminal strip. The "jumper" link should swing free. Tighten the ground screw to keep the link from rattling, and make sure that the link is not touching the AM terminal screw. This AM terminal is now free for the connection of an AM antenna wire.

REPLACING THE DIAL LAMPS

THREE #47 BULBS are used. To replace any one of them, remove the composition board rear panel of the *Philharmonic*. The bulb assemblies can then be reached from the rear of the set. Press the metal clip holding the bulb assembly to the chassis and pull downward. Once the assembly has been removed from the chassis the bulb can be detached by turning it counterclockwise.

CAUTION: As a safety precaution, disconnect the power cord *before* removing the back panel of the *Philharmonic*.

Lamps can be ordered from Fisher Radio Corporation, 21-21 44th Drive, Long Island City 1, New York. The part number is I50009-1.

FOR THE TECHNICALLY-MINDED

THE FISHER *Philharmonic* is a high fidelity stereophonic radio-phonograph console, incorporating a tuner capable of receiving AM, FM, and multiplexed FM stereo broadcasts; a Record Changer, a power amplifier, and two matched speaker systems.

The FM tuner portion uses an ECC85/6AQ8 in its "front end," with the first half of this dual triode tube used as a grounded-grid RF amplifier, and the second half as a local oscillator and mixer. The mixer produces the 10.7 megacycle intermediate frequency (IF) which is amplified by three IF stages. The final IF stage also behaves as a limiter, effectively clipping off any spurious amplitude variations that may have affected the FM signal, and thus providing the noise-free reception which contributes so much to the popularity of FM. A wide-band, low-distortion ratio detector follows the limiter, using two matched semiconductor diodes.

The optional multiplex adapter is the device which extracts separate left and right channels from the multiplexed stereo signal transmitted by the radio station. In all FISHER tuners, decoding is accomplished by the far superior time-division switching technique, resulting in better separation than available with other methods, less noise, and greater long-term stability.

Turning to the AM portion of the tuner, we find a tuned RF amplifier stage (EF93/6BA6), which puts the sensitivity and selectivity of this tuner far above most conventional AM radios. Conversion to the 455 kc IF is accomplished in an EK90/6BE6 mixer-oscillator. The IF amplifier features a choice of sharp or broad selectivity.

In the control portion of the Receiver chassis we find the switching center of the *Philharmonic*. Here are the tone controls, providing 17 db total variation of bass and treble; the Volume and Balance controls; and the Selector switch, which selects any one of five possible program sources or modes of operation.

Loudness compensation is provided automatically to minimize apparent loss of bass and treble at low volumes due to normal characteristics of the human ear. Output jacks are provided for feeding a tape recorder with a signal unaffected by tone or Volume control settings.

The power amplifiers (one ELL80 dual-beam-power tube for each channel, connected push-pull) supply the audio power necessary to drive the two three-way speaker systems. Twenty watts of undistorted music power is available. Each push-pull output stage is driven by a split-load phase inverter, which is fed in turn by a triode voltage amplifier. Negative feedback is taken, in each channel, from the output transformer secondary to the voltage amplifier cathode.

TECHNICAL SPECIFICATIONS

Music Power Output (IHFM standard, both channels)	20 watts
Harmonic Distortion at Rated Music Power Output	1.0%
Frequency Response	Uniform throughout audible range as an integrated system
FM-multiplex Stereo Separation (with optional MPX-77 adaptor)	Better than 30 db at 1 kc
Amplifier Channel Separation)	50 db at 1 kc
Sensitivity (AUX and TAPE inputs, for Rated Output)	320 millivolts
FM Tuner Sensitivity (IHFM standards)	2.3 microvolts
AM Tuner Sensitivity	5.0 microvolts
Speaker Complement (each channel)	One 8″ woofer One 4 x 6″ midrange unit One 3″ tweeter
Record Changer	Garrard AT-6
Total Power Consumption (including Changer)	100 watts, 110 VA